

# MIGRATION AND CLIMATE CHANGE: AN OVERVIEW

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*Climate change has become a major concern for the international community. Among its consequences, its impact on migration is the object of increasing attention from both policy-makers and researchers. Yet, knowledge in this field remains limited and fragmented. This article therefore provides an overview of the climate change – migration nexus: on the basis of available empirical findings, it investigates the key issues at stake, including the social and political context in which the topic emerged; States' policy responses and the views of different institutional actors; critical perspectives on the actual relationship between the environment and (forced) migration; the concepts and notions most adequate to address this relationship; gender and human rights implications; as well as international law and policy orientations. Two major interconnected arguments arise. The first regards the weight of environmental and climatic factors in migration and their relationship to other push or pull factors, whether of a social, political, or economic nature. The second is about the political framework in which such migration flows should take place and the manner in which to treat the people who move in connection with environmental factors. The two issues are deeply intertwined, as the extent to which the environment determines migration is intimately connected to the status to be associated with the people concerned.*

*Keywords:* migration, climate change, environmental migrants, forced migration

## 1. Introduction

Climate change has become a major concern for the international community. Among its consequences, its impact on migration is the object of increasing attention from both policy-makers and researchers. Yet, knowledge in this field remains limited and fragmented: there are uncertainties surrounding the actual mechanisms at stake, the number of persons affected, and the geographical zones concerned; there are debates between those who stress the direct impact of the environment on population flows and those who rather insist on the social, economic, and political contexts in which such flows occur; different disciplines bring in their respective inputs to the literature. Moreover, the available information is heterogeneous, as research outcomes coexist with numerous “grey”

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publications, such as policy reports,<sup>1</sup> advocacy brochures by IGOs and NGOs,<sup>2</sup> and conference proceedings.<sup>3</sup>

This article therefore provides an overview of the climate change-migration nexus. On the basis of available empirical evidence, it investigates the key issues at stake, including the social and political context in which the topic emerged; States' policy responses and the views of different institutional actors; critical perspectives on the actual relationship between the environment and (forced) migration; the concepts and notions most adequate to address this relationship; gender and human rights implications; as well as international law and policy orientations.

Two major interconnected arguments arise. The first regards the weight of environmental and climatic factors in migration and their relationship to other push or pull factors, whether of a social, political, or economic nature. Understanding the role of the environment in migration dynamics implies analysing how and why people are vulnerable to climate change, as well as an examination of the different strategies they develop to cope with (or adapt to) environmental stress – migration being one among other such strategies. The second argument is about the political framework in which such migration flows should take place and the manner in which to treat the people who move in connection with environmental factors. This implies a discussion of the possible protection to be granted to those in a situation of vulnerability and the responsibilities of States and of the international community in providing such protection. The two issues are deeply intertwined, as the extent to which the environment determines migration is intimately connected to the status to be associated with the people concerned.

This article is structured in the following way. It first provides a short historical overview of the debate. It then discusses the impact on migration of three major environmental factors linked to climate change (tropical cyclones,

<sup>1</sup> J. Barnett & M. Webber, *Accommodating Migration to Promote Adaptation to Climate Change*, Stockholm, Commission on Climate Change and Development, 2009; Intergovernmental Panel on Climate Change (IPCC), "Summary for Policymakers", in S. Solomon et al. (eds.), *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge/New York, Cambridge University Press, 2007, available at: [http://www.ipcc.ch/publications\\_and\\_data/ar4/wg1/en/contents.html](http://www.ipcc.ch/publications_and_data/ar4/wg1/en/contents.html) (last visited 17 Mar. 2011); N. Stern, *The Economics of Climate Change*, Cambridge, Cambridge University Press, 2007.

<sup>2</sup> Christian Aid, *Human Tide: The Real Migration Crisis*, Christian Aid Report, May 2007, available at: <http://www.christianaid.org.uk/Images/human-tide.pdf> (last visited 17 May 2011); K. Warner et al., *In Search of Shelter: Mapping the Effects of Climate Change on Human Migration and Displacement*, CARE/CIESIN/United Nations High Commissioner for Refugees (UNHCR)/United Nations University Institute for Environment and Human Security (UNU-EHS)/World Bank, 2009, available at: [http://www.ciesin.columbia.edu/documents/clim-migr-report-june09\\_media.pdf](http://www.ciesin.columbia.edu/documents/clim-migr-report-june09_media.pdf) (last visited 17 Mar. 2011).

<sup>3</sup> International Organization for Migration (IOM) & United Nations Population Fund (UNFPA), *Expert Seminar: Migration and the Environment*, International Dialogue on Migration No. 10, Geneva, IOM, 2008, available at: [http://www.reliefweb.int/rw/lib.nsf/db900sid/PANA-7FNH38/\\$file/IOM\\_june2008.pdf?openelement](http://www.reliefweb.int/rw/lib.nsf/db900sid/PANA-7FNH38/$file/IOM_june2008.pdf?openelement) (last visited 17 Mar. 2011); IOM, *Migration, Climate Change and the Environment*, IOM Policy Brief, May 2009, available at: [http://www.iom.int/jahia/webdav/shared/shared/mainsite/policy\\_and\\_research/policy\\_documents/policy\\_brief\\_envmig.pdf](http://www.iom.int/jahia/webdav/shared/shared/mainsite/policy_and_research/policy_documents/policy_brief_envmig.pdf) (last visited 17 Mar. 2011); T. Afifi & J. Jäger (eds.), *Environment, Forced Migration and Social Vulnerability*, Bonn, Springer Verlag, 2010.

heavy rains, and floods; droughts and desertification; and sea-level rise). The following sections explore the core issues that are raised by the relationship between climate change and migration, namely the plurality of factors that shape migratory dynamics, the social determinants of people's vulnerability to climate change, the diversity in the migration patterns associated with climate change, and issues of data collection and methodology. The different concepts used by researchers in the field, along with their analytical and political implications, are reviewed, which leads to a discussion of the legal implications of environmental migration and the responsibilities of States. The last section explores the possible policy orientations to address the climate change-migration nexus.

## 2. A short history of the debate

Environmental migration is an issue that is commonly presented as “new” or as part of “future trends”. Yet, it is an old-standing phenomenon, as the history of the debate shows. Environmental factors indeed ranked highly in the first systematic theories of migration. In 1889, Ravenstein mentioned “unattractive climate” as having “produced and [...] still producing currents of migration” (along with “bad or oppressive laws, heavy taxation, [...] uncongenial social surroundings, and even compulsion” and, most importantly in his view, economic motivations).<sup>4</sup> The American geographer Ellen Churchill Semple later wrote that “the search for better land, milder climate and easier conditions of living starts many a movement of people which, in view of their purpose, necessarily leads them into an environment sharply contrasted to their original habitat”.<sup>5</sup> However, despite these early historical insights, references to the environment as an explanatory factor were to progressively disappear from the migration literature over the course of the 20th century. Indeed, core publications such as J.W. Gregory, Donald R. Taft, or Julius Isaac do not mention environmental factors.<sup>6</sup> The same applies to Zelinsky's hypothesis on “mobility transition”<sup>7</sup> and to Stouffer's “intervening opportunities” approach.<sup>8</sup> The environment is also absent from neo-classical economic theory,<sup>9</sup> from geography,<sup>10</sup> as

<sup>4</sup> E.G. Ravenstein, “The Laws of Migration”, *Journal of the Royal Statistical Society*, 52(2), 1889, 286.

<sup>5</sup> E.C. Semple, *Influences of Geographic Environment*, New York, Henry Holt and Company, 1911, 143.

<sup>6</sup> J.W. Gregory, *Human Migration and the Future - A Study of the Causes, Effects & Control of Emigration*, London, Seeley, Service & Co., 1928; D.J. Taft, *Human Migration: A Study of International Movements*, New York, The Ronald Press Company, 1936; J. Isaac, *Economics of Migration*, New York, Oxford University Press, 1947.

<sup>7</sup> W. Zelinsky, “The Hypothesis of the Mobility Transition”, *Geographical Review*, 61, 1971, 219–249.

<sup>8</sup> S. Stouffer, “Intervening Opportunities: A Theory Relating Mobility and Distance”, *American Sociological Review*, 5(6), 1940, 845–867.

<sup>9</sup> J. Harris & M.P. Todaro, “Migration, Unemployment and Development: A Two-Sector Analysis”, *American Economic Review*, 60(1), 1970, 126–142.

<sup>10</sup> G. Olsson, “Distance and Human Interaction. A Migration Study”, *Geografiska Annaler. Series B, Human Geography*, 47(1), 1965, 3–43.

well as from the so-called “ecological models”.<sup>11</sup> Since the end of the 1980s, there have been numerous theoretical publications on international migration, but without any mention of environmental factors.<sup>12</sup>

Four main trends explain this decreasing interest in natural or environmental factors. First, according to a powerful Western-centric idea, technological progress would decrease the influence of nature on human life; Petersen thus views environmental migration as a “primitive” form of migration bound to decline as human beings gradually increase their control over their environment.<sup>13</sup> Second, environment-based explanations of migration were progressively rejected for their supposedly deterministic nature, to the benefit of socio-cultural approaches or Marxist/economic perspectives. A third reason is the rise of the economic paradigm in migration theory: while already present in Ravenstein’s work, economic factors were given the most central role, whether in Marxism-inspired or neoclassical research.<sup>14</sup> Finally, forced migration studies, while they could have included environmentally induced displacements, rather developed upon a strong political premise according to which “States make refugees”.<sup>15</sup>

It is in this intellectual context that “environmental migrants” came back in the picture, as one of the pressing issues raised by climate change. In the 1980s and beginning of the 1990s, a few landmark publications raised the issue and provided alarmist estimates of the number of people foreseen to move because of climate change; Norman Myers argued for example that up to 150 million environmental refugees were to be expected by the end of the 21st century.<sup>16</sup>

<sup>11</sup> D.F. Sly & J. Tayman, “Ecological Approach to Migration Reexamined”, *American Sociological Review*, 42(5), 1977, 783–795. When the term ‘environment’ is used in this context, it has nothing to do with natural variables but refers to population factors such as the density of habitation, the ethnic composition of neighbourhoods, etc.

<sup>12</sup> See notably A. Portes & J. Böröcz, “Contemporary Immigration: Theoretical Perspectives on its Determinants and Modes of Incorporation”, *International Migration Review XXIII*, 1996, 606–630; D.S. Massey et al., *Worlds in Motion: Understanding International Migration at the End of the Millennium*, Oxford, Clarendon Press, 1998; R. Cohen, *The Cambridge Survey of World Migration*, Cambridge, Cambridge University Press, 1995; C.B. Brettell & J.F. Hollifield (eds.), *Migration Theory - Talking across Disciplines*, London, Routledge, 2007. One notable exception is A.H. Richmond, *Global Apartheid: Refugees, Racism, and the New World Order*, Toronto, Oxford University Press, 1994.

<sup>13</sup> W. Petersen, “A General Typology of Migration”, *American Sociological Review*, 23(3), 1958, 256–266.

<sup>14</sup> Harris & Todaro, “Migration, Unemployment and Development”; S. Castles & G. Kosack, *Immigrant Workers and Class Structure in Western Europe*, Oxford, Oxford University Press, 1973. One could nevertheless note that environmental factors are implicit in the New Economics of migration; households’ collective risk strategies in rural societies include for example droughts or other environmental factors (thus motivating the emigration of part of the household, see O. Stark & D.E. Bloom, “The New Economics of Labor Migration”, *American Economic Review*, 75(2), 1985, 175–178).

<sup>15</sup> E. Marx, “The Social World of Refugees: A Conceptual Framework”, *Journal of Refugee Studies*, 3(3), 1990, 189–203; O. Bakewell, “Editorial Introduction: Researching Refugees: Lessons from the Past, Current Challenges and Future Directions”, *Refugee Survey Quarterly*, 26(3), 2007, 6–14.

<sup>16</sup> N. Myers, “Environmental Refugees in a Globally Warmed World”, *Bioscience*, 43, 1993, 752–761. See also, E. El-Hinnawi, *Environmental Refugees*, Nairobi, United Nations Environmental Program, 1985; and J. Jacobson, *Environmental Refugees: A Yardstick for Habitability*, Worldwatch Paper No. 86, Washington, D.C., Nov. 1988.

In 1990, the first United Nations (UN) intergovernmental report on climate change stated that “the gravest effects of climate change may be those on human migration as millions will be displaced”.<sup>17</sup> And in 1994, paragraph 10.7 of the Programme of Action of the International Conference on Population and Development (held in Cairo and widely understood as the first major occurrence of migration issues in international debates) stated that “Governments are encouraged to consider requests for migration from countries whose existence, according to available scientific evidence, is imminently threatened by global warming and climate change”.<sup>18</sup>

These early research and policy discussions were heavily embedded in a climate change agenda, characterised by a strategy to raise awareness surrounding the potential impact of climate change on migration – and on security at large. In this approach, “environmental migrants” were portrayed as forced to leave their country and as moving exclusively for climate change-related reasons, while the tone of the debate was future-oriented – hence favouring usually alarmist predictions rather than empirical analysis of already-existing flows. This clearly clashed with most migration researchers’ convictions and led to a long-standing divide between natural and social scientists: while the former took for granted the interrelation between environmental deterioration and migration and stressed the very high number of people concerned, the latter considered the environment as, at most, one driver of migration among many others and were very cautious regarding the estimates put forward.<sup>19</sup> Moreover, alarmist predictions that aimed at sensitizing Governments and public opinions rather contributed to further stigmatise migrants from less developed States, while migration researchers reacted in a very defensive way that did little to favour a sound debate between disciplines.

Today, it would seem that, although the debate still goes on, the disciplinary divide is gradually being overcome: environmental scientists tend to be more cautious while migration specialists do recognize the role of the natural environment in migration dynamics. On the whole, most scholars now dismiss the apocalyptic predictions that used to influence debates; there is also a consensus on the fact that available evidence regarding the processes at stakes is still far

<sup>17</sup> IPCC, “Policymakers’ Summary”, in W.J.McG. Tegart, G.W. Sheldon & D.C. Griffiths (eds.), *Climate Change: The IPCC Impacts Assessment (1990). Report prepared for Intergovernmental Panel on Climate Change by Working Group II*, Canberra, Australian Government Publishing Service, 1990, available at: [http://www.ipcc.ch/ipccreports/far/wg\\_II/ipcc\\_far\\_wg\\_II\\_full\\_report.pdf](http://www.ipcc.ch/ipccreports/far/wg_II/ipcc_far_wg_II_full_report.pdf) (last visited 17 Mar. 2011).

<sup>18</sup> United Nations Population Information Network, *Report of the International Conference on Population and Development*, Cairo, 5–13 Sep. 1994, UN Doc. A/CONF.171/13, 18 Oct. 1994.

<sup>19</sup> R. Black, *Environmental Refugees: Myth or Reality?*, New Issues in Refugee Research, Research Paper No. 34, Geneva, UNHCR, Mar. 2001, available at: <http://www.unhcr.org/3ae6a0d00.html> (last visited 17 Mar. 2011); S. Castles, *Environmental Change and Forced Migration: Making Sense of the Debate*, New Issues in Refugee Research, Research Paper No. 70, Geneva, UNHCR, Oct. 2002, available at: <http://www.unhcr.org/3de344fd9.html> (last visited 17 Mar. 2011).

from satisfactory.<sup>20</sup> Yet, in a context in which climate change has become an overarching priority for a wide range of actors worldwide, the vision of ‘climate refugees’ escaping environmental disasters remains a powerful way to catch the imagination of the public – hence the numerous initiatives taken by politicians, environmental activists, international organizations, and to a certain extent, by lawyers, climatologists, or social scientists.<sup>21</sup> Alarmist future predictions thus remain popular; as Nicholas Stern wrote in his 2007 report on the economic consequences of global warming: “Greater resource scarcity, desertification, risks of droughts and floods, and rising sea-levels could drive many millions of people to migrate”.<sup>22</sup>

In sum, there are at least three lessons to be learnt from this history of the debate. First, the controversy between natural and social scientists is deeply rooted in intellectual history and the weight given to environmental factors in migration dynamics is therefore both a matter of “hard facts” and of intellectual traditions; thus, a single historical migratory event can be initially understood in environmental terms, and be later reframed in economic or political terms.<sup>23</sup> In this respect, the current focus on environmental migration appears less as a “new” research issue than as an expression of another paradigmatic shift. Second, this field of study is inherently political, which means that research and statements regarding the climate change-migration nexus are very hard to dissociate from the highly politicised debate on climate change itself. Third, as a result of this specific history, this field of study is contested while poor in

<sup>20</sup> For recent studies and synthesis that illustrate these trends, see G. Hugo, *Migration, Development and Environment*, Geneva, IOM, 2008; D. Kniveton et al., *Climate Change and Migration: Improving Methodologies to Estimate Flows*, Migration Research Series No. 33, Geneva, IOM, 2008; E. Piguet, *Climate Change and Forced Migration*, New Issues in Refugee Research, Research Paper No. 153, Geneva, UNHCR, Jan. 2008, available at: <http://www.unhcr.org/47a316182.html> (last visited 17 Mar. 2011); J. Jäger et al. (eds.), *Environmental Change and Forced Migration Scenarios*, Synthesis Report, ECH-FOR, 2009, available at: [http://www.each-for.eu/documents/EACH-FOR\\_Synthesis\\_Report\\_090515.pdf](http://www.each-for.eu/documents/EACH-FOR_Synthesis_Report_090515.pdf) (last visited 17 Mar. 2011); J. Morrissey, *Environmental Change and Forced Migration: A State of the Art Review*, Oxford, Refugee Studies Center, Oxford Department of International Development, 2009; C. Tacoli, “Crisis or Adaptation? Migration and Climate Change in a Context of High Mobility”, *Environment and Urbanization*, 21(2), 2009, 513–525; O. Brown, *Migration and Climate Change*, Geneva, IOM, 2008; S. Perch-Nielsen, M.B. Bättig & D. Imboden, “Exploring the Link between Climate Change and Migration”, *Climatic Change*, 91(3–4), 2008, 375–393; G. Jonsson, *The Environmental Factor in Migration Dynamics – A Review of African Case Studies*, Working Paper No. 21, International Migration Institute, University of Oxford, 2010, available at: <http://www.imi.ox.ac.uk/pdfs/imi-working-papers/wp21-jonsson> (last visited 17 Mar. 2011); S.F. Martin, “Climate Change, Migration and Governance”, *Global Governance*, 16(3), 2010, 397–414; V. Kolmannskog, “Climate Change, Human Mobility, and Protection: Initial Evidence from Africa”, *Refugee Survey Quarterly*, 29(3), 2010, 103–119.

<sup>21</sup> Warner et al., *In Search of Shelter*; F. Biermann & I. Boas, “Preparing for a Warmer World: Towards a Global Governance System to Protect Climate Refugees”, *Global Environmental Politics*, 10(1), 2010, 60–88; Collectif Argos, *Climate Refugees*, Boston, MIT Press, 2010.

<sup>22</sup> Stern, *The Economics of Climate Change*.

<sup>23</sup> Examples of this paradigmatic shift include the Irish famine exodus of the mid-19th century and the 1930s droughts in the American Dust Bowl, which are nowadays reinterpreted as complex socio-political processes rather than ‘simple’ environmental disasters (R. Scally, “The Irish and the ‘Famine exodus’ of 1847”, in R. Cohen (ed.), *The Cambridge Survey of World Migration*, Cambridge, Cambridge University Press, 1995, 80–85; R. McLeman et al., “Drought Adaptation in Rural Eastern Oklahoma in the 1930s: Lessons for Climate Change Adaptation Research”, *Mitigation and Adaptation Strategies for Global Change*, 13(4), 2008, 379–400).

empirical evidence. While terms such as “environmental migrants” have been growingly used over the last two decades, the number of in-depth studies remains surprisingly low.

Before proceeding to the examination of the core issues raised by the climate change-migration nexus, the next section therefore provides a review of the available knowledge on three main environmental factors that are predicted to grow in significance due to climate change in the years to come and that are held for having an impact on migration: (1) the increase in strength and frequency of tropical cyclones, heavy rains, and floods; (2) droughts and desertification; and (3) sea-level rise (SLR).

### 3. Tropical cyclones, torrential rains, and floods

Tropical cyclones,<sup>24</sup> storms, and floods are typical examples of rapid-onset phenomena impacting on population displacement. The approximate estimates of the number of persons already affected yearly by flooding (99 million between 2000 and 2008)<sup>25</sup> and by tropical cyclones and storms (39 million) give an idea of the amplitude of the threat,<sup>26</sup> but the number of people who would be affected by a climate change-induced increase of such disasters is very difficult to estimate. No climate model is indeed able to accurately predict the exact localisation and timing of such disasters and there is therefore no certainty as to whether or not the affected zones will be densely populated.

According to a number of detailed studies,<sup>27</sup> rapid onset phenomena lead overwhelmingly to short-term internal displacements rather than long-term or long-distance migration. This is linked to the fact that victims, who live mainly in poor countries, lack the resources to move. They tend to stay where they live or to move only within a short distance. Moreover, many return and reconstruct their homes in the disaster zone. A synthesis of results on the fate of victims of natural disasters displaced in 18 sites showed (already 20 years ago) that there are few exceptions to the strong propensity to return and to the weak potential of

<sup>24</sup> We use the generic term tropical cyclone to include hurricanes (western Atlantic/eastern Pacific), typhoons (western Pacific), cyclones (southern Pacific/Indian Ocean), tropical storm, etc.

<sup>25</sup> We use the classification of natural disasters taken from International Disaster Database EM-DAT (<http://www.emdat.be/classification>). Floods are classified as hydrological disasters whereas hurricanes are labeled as meteorological disasters.

<sup>26</sup> J. Rodriguez et al., *Annual Disaster Statistical Review 2008: The Numbers and Trends*, Brussels, Centre for Research on the Epidemiology of Disasters (CREED), 2009, available at: [http://www.cred.be/sites/default/files/ADSR\\_2008.pdf](http://www.cred.be/sites/default/files/ADSR_2008.pdf) (last visited 17 Mar. 2011).

<sup>27</sup> See in particular, S. Lonergan, “The Role of Environmental Degradation in Population Displacement”, *Environmental Change and Security Project Report*, 4, 1998, 5–15; L.M. Hunter et al., “Environmental Hazards, Migration, and Race”, *Population & Environment*, 25(1), 2003, 23–29; N. Kliot, “Environmentally Induced Population Movements: Their Complex Sources and Consequences – A Critical Review”, in J.D. Unruh, M.S. Krol & N. Kliot (eds.), *Environmental Change and Its Implications for Population Migration*, Dordrecht, Kluwer, 2004, 69–100; B.K. Paul, “Evidence Against Disaster-induced Migration: The 2004 Tornado in North-central Bangladesh”, *Disasters*, 29(4), 2005, 370–385; J.F. Pais & J.R. Elliott, “Places as Recovery Machines: Vulnerability and Neighborhood Change After Major Hurricanes”, *Social Forces*, 86(4), 2008, 1415–1453.

long term migration.<sup>28</sup> Paradoxically, extreme events may even act as *pull* rather than *push* factors: in the case of the Indian Ocean Tsunami in 2004, relatives moved to the area to find out whether their family had been affected and to offer support; in addition, reconstruction projects increased the demand for labour and attracted migrant workers from other areas; finally, new economic opportunities arose out of the presence of numerous aid-providing institutions.<sup>29</sup> This being said, macro-level investigations that compare rates of emigration with local exposure to disasters lead to more contrasted results. Several studies demonstrate that a high frequency of disasters (including floods, storms, hurricanes, drought, and frost) encourages people to move away from their town or country.<sup>30</sup>

Overall, the potential of tropical cyclones, floods, and torrential rains to provoke long-term and long-distance migration, while ascertained, remains limited. As pointed out by Kniveton et al.,<sup>31</sup> the level of vulnerability can be tremendously different from one region to another and it is only if the affected society is highly dependent on the environment for livelihood and if social factors exacerbate the impact of the disaster – as was typically the case with Hurricane Katrina<sup>32</sup> – that significant migration takes place.

#### 4. Drought and desertification

In the recent past, the number of persons affected by climatic disasters such as extreme temperatures, droughts, or wildfire is estimated at around 83 million each year (between 2000 and 2008).<sup>33</sup> The IPCC foresees that 74 to 250 million people will be affected, in 2020, by increased water shortages in Africa and Asia; it also states that:

[F]reshwater availability in Central, South, East and Southeast Asia, particularly in large river basins, is projected to decrease due to climate change which, along with population growth and increasing demand arising

<sup>28</sup> I. Burton, R.W. Kates & G.F. White, *The Environment as Hazard*, New York, Guilford Press, 1993.

<sup>29</sup> Paul, “Evidence Against Disaster-induced Migration”; A. Naik, E. Stigter & F. Laczko, *Migration, Development and Natural Disasters: Insights from the Indian Tsunami*, Geneva, IOM, 2007.

<sup>30</sup> See S. Saldaña-Zorrilla & K. Sandberg, “Impact of Climate-related Disasters on Human Migration in Mexico: A Spatial Model”, *Climatic Change*, 96(1), 2009, 97–118 for Mexico; W. Naudé, *Conflict, Disasters and No Jobs: Reasons for International Migration from Sub-Saharan Africa*, UNU-WIDER, Research Paper No. 2008/85, Oct. 2008, available at: [http://www.wider.unu.edu/publications/working-papers/research-papers/2008/en\\_GB/rp2008-85/\\_files/80186791133512161/default/rp2008-85.pdf](http://www.wider.unu.edu/publications/working-papers/research-papers/2008/en_GB/rp2008-85/_files/80186791133512161/default/rp2008-85.pdf) (last visited 17 Mar. 2011) for sub-Saharan Africa; R. Reuveny & W.H. Moore, “Does Environmental Degradation Influence Migration? Emigration to Developed Countries in the Late 1980s and 1990s”, *Social Science Quarterly*, 90, 2009, 461–479 for developing countries; and T. Afifi & K. Warner, *The Impact of Environmental Degradation on Migrations Flows across Countries*, Working Paper No. 5, Bonn, UNU-EHS, 2008, available at: [http://www.gcca.eu/user/documents/The\\_impact\\_of\\_Environmental\\_Degradation\\_201011110157.pdf](http://www.gcca.eu/user/documents/The_impact_of_Environmental_Degradation_201011110157.pdf) (last visited 17 Mar. 2011) for a sample of 172 countries of the world.

<sup>31</sup> Kniveton et al., *Climate Change and Migration*.

<sup>32</sup> R. Reuveny, “Ecomigration and Violent Conflict: Case Studies and Public Policy Implications”, *Human Ecology*, 36(1), 2008, 1–13.

<sup>33</sup> Rodriguez et al., *Annual Disaster Statistical Review 2008*.

from higher standards of living, could adversely affect more than a billion people by the 2050s.<sup>34</sup>

Compared to cyclones and flooding, a lack of drinking and irrigation water usually generates much less sudden impacts, and thus leads to more progressive patterns of mobility. Empirical evidence is mixed. On the one hand, there are many well-known cases of mass population movements attributed to droughts in Africa (Sahel, Ethiopia), South America (Argentina, Brazil), the Middle East (Syria, Iran), and Central and Southern Asia.<sup>35</sup> The impact of droughts on migration is also documented in the Malian Gourma region by an historical overview over the 20th century.<sup>36</sup> In South America, Leighton notes that “the periodic drought and desertification plaguing northeast Brazil contributed to factors causing 3.4 million people to emigrate between 1960 and 1980”.<sup>37</sup> On the other hand, many researchers question the link between drought and emigration by emphasising the multiplicity of causes determining migration and the other survival strategies available to affected populations.<sup>38</sup> According to Kniveton et al., “drought seems to cause an increase in the number of people who engage in short-term rural to rural types migration. On the other hand, it does not affect, or even decrease international, long-distance moves.”<sup>39</sup> In the absence of a consensus, three broad kinds of results can be identified in the literature.

The first confirms the link between drought and emigration. Barrios et al. use a cross-country data set of 78 countries over a 30-year period and observe that shortages in rainfall increased rural exodus in the Sub-Saharan African Continent (but not elsewhere in the developing world) and thus contributed significantly to urbanisation in Africa.<sup>40</sup> In the Americas, Munshi establishes a correlation between emigration to the United States and low rainfall in the region of origin in Mexico.<sup>41</sup> Van der Geest uses a geographical analysis to evaluate the relation between out-migration propensities and two indicators of natural resources scarcity in Ghana: rainfall data (average annual rainfall in Northern Ghana from 1986 to 1995) and the “greenness of the environment” measured by a vegetation index; he concludes that migration propensities are higher in environmentally less-endowed districts and that lack of rainfall is the

<sup>34</sup> IPCC, “Summary for Policymakers”, 10.

<sup>35</sup> R. Black & V. Robinson, *Geography and Refugees*, London, Belhaven, 1993.

<sup>36</sup> J. Pedersen, “Drought, Migration and Population Growth in the Sahel: The Case of the Malian Gourma: 1900–1991”, *Population Studies*, 49, 1995, 111–126.

<sup>37</sup> M. Leighton, “Desertification and Migration”, in P.M. Johnson, K. Mayrand & M. Paquin (eds.), *Governing Global Desertification*, London, Ashgate, 2006, 47.

<sup>38</sup> A. De Haan, K. Brock & N. Coulibaly, “Migration, Livelihoods and Institutions: Contrasting Patterns of Migration in Mali”, *The Journal of Development Studies*, 38(5), 2002, 37–58.

<sup>39</sup> Kniveton et al., *Climate Change and Migration*, 34.

<sup>40</sup> S. Barrios, L. Bertinelli & E. Strobl, “Climatic Change and Rural–Urban Migration: The Case of sub-Saharan Africa”, *Journal of Urban Economics*, 60(3), 2006, 357–371.

<sup>41</sup> K. Munshi, “Networks in the Modern Economy: Mexican Migrants in the U.S. Labor Market”, *Quarterly Journal of Economics*, 118(2), 2003, 549–599.

strongest predictor of migration but this result is partially contradicted by a time series analysis by the same author showing a positive impact of rain on migration levels.<sup>42</sup> Finally, Afifi and Warner, in their study of 172 countries, find that indexes of desertification, water scarcity, soil salinization, and deforestation are all correlated with emigration.<sup>43</sup>

A second group of case studies, on the contrary, conclude that droughts have a minimal impact on migration. The most often cited relies on two surveys (1982 and 1989) conducted in rural Mali with over 7,000 individuals and 300 households before and after a series of droughts affecting the country; a reduction (and not an increase) in international emigration was observed due to the lack of available means to finance the journey, even if short term internal migration of women and children did rise.<sup>44</sup> Smith also found a limited impact on emigration during the 1994 droughts in Bangladesh, as less than one per cent of households had to resort to emigration.<sup>45</sup> This result is coherent with the analysis on interprovincial migrations in Burkina Faso by Henry et al., where environmental variables and droughts contributed only marginally to migrations; the authors conclude that, in this country, even if migration is influenced by biophysical changes in the environment, claims that environmental change alone is causing massive displacements are not supported by the data.<sup>46</sup> Kniveton et al. find a similar result in their analysis of the relationship between climate variability and migration to the US in the drought-prone Mexican regions of Zacatecas and Durango between 1951 and 1991:<sup>47</sup> they find no significant correlation in Zacatecas whereas, in Durango, more rainfall generates more emigration and not the contrary. In the same way, Naudé finds no correlation between emigration and water scarcity (proxied by the surface of land under irrigation) across 45 Sub-Saharan African countries.<sup>48</sup>

Finally, several studies show contrasting patterns according to the type of migration concerned (long-term versus short-term and long-distance versus short-distance). Henry et al. collected individual migration histories among 3,911 individuals and environmental data at the community-level in about 600 places of origin mentioned by migrants in Burkina-Faso; the environmental indicator consists of rainfall data covering the 1960–1998 period and the dependant variable is the risk of the first village departure; findings suggest that people from the drier regions are more likely to engage in both temporary and

<sup>42</sup> K. Van der Geest, *North-South Migration in Ghana: What Role for the Environment?*, International Conference on Environment, Forced Migration and Social Vulnerability, Bonn, 9–11 Oct. 2008, available at: [http://geest.socsci.uva.nl/publications/vd\\_geest\\_2008a.pdf](http://geest.socsci.uva.nl/publications/vd_geest_2008a.pdf) (last visited 17 Mar. 2011).

<sup>43</sup> Afifi & Warner, *The Impact of Environmental Degradation*.

<sup>44</sup> S.E. Findley, "Does Drought Increase Migration? A Study of Migration from Rural Mali during the 1983–85 Drought", *International Migration Review*, 28(3), 1994, 539–553.

<sup>45</sup> K. Smith, *Environmental Hazards, Assessing the Risk and Reducing Disaster*, London, Routledge, 2001.

<sup>46</sup> S. Henry, P. Boyle & E.F. Lambin, "Modelling Inter-provincial Migration in Burkina Faso: The Role of Socio-demographic and Environmental Factors", *Applied Geography*, 23(2–3), 2003, 115–136.

<sup>47</sup> Kniveton et al., *Climate Change and Migration*, 42–47.

<sup>48</sup> Naudé, *Conflict, Disasters and No Jobs*.

permanent migrations to other rural areas and that short-term rainfall deficits increase long-term migration to rural areas but decrease short-term moves to distant destinations.<sup>49</sup> The evidence that scarcity of water and desertification do have an impact on migration patterns, but that they mainly generate short-distance moves and that their impact is mediated by numerous other variables, is also confirmed by local case studies, among others in the context of the EACH-FOR project.<sup>50</sup>

Again, one can conclude that a link does exist between rain deficits and migration, but that it remains highly contextual – so that projections of increased migrations linked to drought-related phenomena are hazardous. Just as for rapid onset phenomenon, it would be difficult to provide an estimate of the magnitude of populations at risk and of the potential migration flows arising from droughts induced by global warming.

## 5. Sea-level rise

In contrast with the two environmental factors discussed so far (tropical cyclones-heavy rains-floods and droughts-desertification), the link between SLR and migration appears much more straightforward. Unlike most other hazards, SLR is virtually irreversible and manifests itself in a more or less linear way over a long period of time. In the absence of new infrastructures such as dykes, this would make definitive out-migration the only possible solution, while allowing for progressive and planned departures. SLR is also at the heart of some of the most dramatic and publicised manifestations of climate change, including the possible disappearance of island states.

Compared to other climatic events, SLR is a rather new phenomenon and the number of available studies remains limited. Historical evidence nevertheless exists; for example, the Chesapeake Bay islands on the Atlantic coast of the USA have experienced SLR since the mid-19th century at rates of about 0.35 cm/year, which contributed, beside other factors, to the abandonment of most of the islands by their resident populations in the early 20th century.<sup>51</sup> The consequences of SLR can be quite reliably predicted and localised, because the configuration of coastlines, their altitude, and their population are simple to integrate into Geographical Information Systems (GIS) that permit simulations and projections. It is therefore possible to calculate – on a global scale – the

<sup>49</sup> S. Henry, B. Schoumaker & C. Beauchemin, “The Impact of Rainfall on the First Out-Migration: A Multi-Level Event-History Analysis in Burkina Faso”, *Population and Environment*, 25(5), 2004, 423–60.

<sup>50</sup> M.A. Hamza, B. El Faskaoui & A. Fermin, *Migration and Environmental Change in Morocco: The Case of Rural Oasis Villages in the Middle Drâa Valley*, Case Study Report, EACH-FOR, 2008, available at: [http://www.each-for.eu/documents/CSR\\_Morocco\\_090328.pdf](http://www.each-for.eu/documents/CSR_Morocco_090328.pdf) (last visited 17 Mar. 2011). See also E. Meze-Hausken, “Migration Caused by Climate Change: How Vulnerable are People in Dryland Areas?”, *Mitigation and Adaptation Strategies for Global Change*, 5(4), 2004, 379–406.

<sup>51</sup> S.J. Arenstam Gibbons & R.J. Nicholls, “Island Abandonment and Sea-level Rise: An Historical Analog from the Chesapeake Bay, USA”, *Global Environmental Change*, 16(1), 2006, 40–47.

number of persons living in low elevation coastal zones and threatened by rising water levels, higher tides, further-reaching waves, salinisation, or coastal erosion.

MacGranahan et al. define “low elevation coastal zones” as being situated at an altitude of less than 10 meters.<sup>52</sup> Even though these zones only account for 2.2 per cent of dry land on Earth, they are presently home to 10.5 per cent of the world population – i.e. around 602 million people, of which 438 million live in Asia and 246 million in the poorest countries of the world. Anthoff provides a slightly lower figure, at 397 million people, which nevertheless remain considerable.<sup>53</sup> Yet, it would be premature to conclude that these people will all be forced to evacuate their houses in the near future. The IPCC report evokes a 7-metre rise in sea-level (consecutive to the possible melting of the Greenland ice cover), but this would occur over several centuries or even millenaries. Of more concern is the scenario of future CO2 emissions based on continuing economic growth with a moderation of fossil fuel use (scenario A1B of the IPCC), which predicts an increase of 0.3 to 0.8 meters of the sea-level by the year 2300.<sup>54</sup> More recent estimations show that this process might go significantly faster than previously thought. On this basis, it seems reasonable to consider that populations living at an altitude of less than 1 meter above sea-level are directly vulnerable – and within a few decades. According to Anthoff et al., 146 million people would be concerned here, 75 per cent of which are in the major river deltas and estuaries in South Asia (Indus, Ganges-Brahmaputra, etc.) and East Asia (Mekong, Yangtze, Pearl River, etc.).<sup>55</sup> Although far less populated, certain islands (such as Tuvalu or the Maldives) are the most threatened in the short-term, as they are situated only centimetres above sea-level.

In sum, SLR probably constitutes the aspect of climate change that represents the clearest threat in terms of long-term forced migration. But reaction to SLR is more complex than the mere abandonment of lands. Migration can indeed happen long before an area really becomes uninhabitable; and symmetrically, concerned populations can elaborate strategies of adaptation and mitigation that may significantly postpone the necessity to leave. The recent decision by the Dutch Government to improve its dyke’s protection system illustrates that financial resources constitute a key factor in this respect.<sup>56</sup>

## 6. The multiple determinants of migration

The studies reviewed above highlight the complexity of the relationship between environmental factors and migration and the fact that climate change is only one

<sup>52</sup> G. MacGranahan, D. Balk & B. Anderson, “The Rising Tide: Assessing the Risks of Climate Change and Human Settlements in Low Elevation Coastal Zones”, *Environment and Urbanization*, 19(17), 2007, 17–37.

<sup>53</sup> D. Anthoff et al., *Global and Regional Exposure to Large Rises in Sea-level: A Sensitivity Analysis*, Working Paper No. 96, Tyndall Centre for Climate Change Research, 2006, available at: [http://www.tyndall.ac.uk/sites/default/files/wp96\\_0.pdf](http://www.tyndall.ac.uk/sites/default/files/wp96_0.pdf) (last visited 17 Mar. 2011).

<sup>54</sup> IPCC, “Summary for Policymakers”.

<sup>55</sup> Anthoff et al., *Global and Regional Exposure*.

<sup>56</sup> P. Kabat et al., “Dutch Coasts in Transition”, *Nature Geoscience*, 2, 2009, 450–452.

factor among several others in explaining migration dynamics. In its simplest form, this refers to the fact that any migratory movement is the product of several converging factors and that environmental stress is always mixed with other causes, which may include economic constraints or opportunities, social networks, political context, etc.

Moreover, factors fostering mobility are not only numerous, but also intertwined. For example, environmental change can generate health problems or food insecurity, which may in turn foster migration. In such cases, identifying the 'primary' cause of migration is probably impossible, as all causes may mutually reinforce each other. Environmental factors may also play a greater role if they emerge in a context already characterised by political, demographic, economic, or social tensions; climate change would thus be an *additional* burden, which can have a multiplier effect. In other words, climate change is unlikely to trigger migration in wealthy and democratic societies, which echoes Amartya Sen's well-known work on famines, according to which these are due less to environmental factors than to ill-founded political choices.<sup>57</sup> Environmental and non-environmental factors can also interact in a step-by-step manner: if people have already moved for predominantly economic reasons, they could be more likely to move again because of climate change.

Discussing multi-causality therefore implies acknowledging the non-direct relationship between climate change and migration, and the factors that mediate between the two. Climate change is clearly a complex environmental process that does not have uniform consequences everywhere; and societies have always had to adapt to changing environmental contexts – a multifaceted process of technological, organizational, institutional, socio-economic, and cultural nature that is likely to be just as complex as climate change itself. The number of variables is therefore important, leading to high uncertainty and local variability.

Policy-wise, multi-causality implies that States are unlikely to suddenly witness the arrival of "environmental migrants", as policy-makers sometimes seem to believe. To a large extent, future migration flows will resemble current ones – at least from the perspective of receiving States in the developed world. This is not to say that climate change has no impact, but rather that its impact will be difficult to identify at first sight.

## 7. The social dimension of vulnerability

The mediating function of social factors in the relationship between climate change and migration points to the fact that people do not have access to the same resources when it comes to reacting or adapting to environmental change. Vulnerability is therefore shaped by a wide range of social variables that determine people's exposure to climate change. From a social sciences perspective, this would seem to go without saying; yet, studies on the climate change-migration nexus have long privileged top-down approaches in which so-called

<sup>57</sup> A.K. Sen, *Poverty and Famines: An Essay on Entitlement and Deprivation*, Oxford, Clarendon Press, 1981.

“hotspots” are identified and mechanically understood as places where migration will occur – regardless of “from below” considerations on the ways in which people will react and adapt. This is manifest in many of the available maps on the topic, in which one can see the geographical zones likely to be affected by climate change – but which say nothing of the social context.

This includes for example gender, as changes in livelihood patterns affect men and women differently, not only because of their different social positions, but also because gender is known to influence the perception of risks (which is a crucial variable in migration strategies), as well as the way people experience displacement. Another core variable in the construction of vulnerability is of course class resources and wealth. Climate change affects disproportionately poor agrarian communities, precisely those that have the least resources to leave their home. The consequences of climate change thus vary according to the context, as the same environmental factor will have different impacts according to the characteristics of the people it affects. It follows that environmental degradation does not mechanically lead to displacement and that one should resist the “tendency to equate populations at risk with population displacement”.<sup>58</sup>

## 8. The diversity in migration and mobility patterns

To understand the impact of climate change on migration, it is necessary to disentangle the different kinds of mobility that may be connected to environmental factors. Indeed, notions such as “displacement”, “mobility”, or “migration” (and the associated predicted numbers of people concerned) refer to situations that range from a few hours spent in a temporary shelter in fear of a hurricane to the relocation of whole communities whose land has disappeared following SLR.

There are at least three variables to take into account. First, migration may be short- or long-term. Discussions could gain in clarity if, for example, the UN-inspired distinction between temporary displacements (less than three months), short-term migration (three months to one year), and long-term migration (more than one year) was more systematically used.<sup>59</sup> Most authors argue that, at present, temporary and short-term patterns of migration are predominantly associated with environmental change. The temporality of migration also has to do with the nature of environmental processes: slow onset phenomena such as desertification or SLR are likely to be associated with long term migration, whereas sudden disasters such as tropical cyclones will generate temporary displacement. But this typology is far from systematic. Moreover, droughts have long fuelled seasonal migration dynamics, which also points to the differences between permanent departures and back-and-forth types of mobility.

<sup>58</sup> Hugo, *Migration, Development and Environment*, 31.

<sup>59</sup> UN, *Recommendations on Statistics of International Migration*, New York, UN, 1998.

A second key distinction is between short- and long-distance migration, or between internal and international moves.<sup>60</sup> Debates on the climate change-migration nexus often seem to focus overwhelmingly on international migration, and particularly on flows from the “South” to the “North”. But this bias tells more on Western fears than on actual trends, as there is evidence that most migration triggered by environmental factors concern internal migration. The third distinction is between forced and voluntary migration. The often-used notion of “environmental refugee” conveys the idea that people are forced to leave their home because of the natural environment. But the more or less constrained nature of migration is open to debate. It is indeed extremely difficult to capture the decision-making process among potential migrants and to understand why, how, and when people decide to leave. This also points to the above-mentioned social dimension of vulnerability, as people’s strategies depend upon their resources and opportunities. Finally, the possible interventions of Governments in moving people (in the case of resettlement schemes for example) further contribute to challenge the distinction between forced and voluntary movement.

This echoes the long-standing debate on the extent to which migration stems from a failure to adapt to climate change. The dominant view is that people who move because of environmental factors are in fact unable to adapt – and thus have no option but to leave. In this view, migration is the worst scenario and the option to avoid, and policies should strive to enable people to stay. But others argue that migration is not only a reactive, but also a proactive strategy; rather than being a last-resort option, it represents a coping mechanism and a way of adapting to climate change, for example through seasonal migration patterns or by arranging for one member of the family to leave (and thus enabling the other members to stay).

This being said, one should note that the distinctions between various forms of migration are not always neat. For example, temporary migration may eventually turn out to be permanent, as people may wish to return but be kept from doing so for various reasons. Short-term mobility may also make people more prone to envisaging international migration at a later stage. The distinction between forced and voluntary migration may also be quite thin, as people develop strategies in reaction to external constraints.

## 9. Methodology

Discussions on the relationship between climate change and migration have long been marked by a methodological divide and, despite recent attempts

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<sup>60</sup> E. Mooney, “The Concept of Internal Displacement and the Case for Internally Displaced Persons as a Category of Concern”, *Refugee Survey Quarterly*, 24(3), 2005, 9–26.

toward improvements,<sup>61</sup> it is widely recognized that a lack of rigor and clarity characterise research on the climate change-migration nexus. Indeed, data pertaining to the environmental and migratory dynamics rarely come from the same sources and are therefore difficult to combine. Moreover, researchers coming from different disciplinary backgrounds and empirical traditions have different methodological orientations and have not always managed to work together.

Two main methodological orientations may be distinguished. The first is mainly descriptive and prospective. It focuses on the identification of the main regions and populations threatened by environmental degradation (the so-called “hotspots”) and on integrated assessments of the vulnerability and resilience of their inhabitants, which provide insights into possible future migrations. The second research strategy is more analytical and attempts to disentangle the specific environmental component among other drivers of migration. The purpose is to question the role and weight of environmental factors in already occurring phenomena.

In any case, while fruitful results can emerge from either quantitative, qualitative, or mixed methodologies, it is of paramount importance to take into account not only the objective characteristics of the environmental degradations but people’s perceptions and representations of their evolution and of their potential migration consequences. The measure of the impact of environmental factors on displacement should be complemented by an examination of the socio-cultural perceptions and representations of these threats among concerned populations,<sup>62</sup> a turn recently advocated in relation to climate change studies in general.<sup>63</sup>

## 10. Conceptual issues

Conceptual issues are a major source of confusion in the debate on the climate change-migration nexus. There are persistent disagreements over the notion to be used to refer to the people migrating because of environmental factors; while popular, terms such as “environmental migrants” or “climate refugees” have raised controversies that are both scientific/academic and political.

From a research perspective, the juxtaposition of the terms “environment” or “climate” with “migrants” or “refugees” has been criticised for implying a mono-causal relationship between environmental factors and human mobility,

<sup>61</sup> D. Kniveton et al., “Challenges and Approaches to Measuring the Migration-Environment Nexus”, in F. Laczo & C. Aghazarm (eds.), *Migration, Environment and Climate Change: Assessing the Evidence*, Geneva, IOM, 2009, 41–111; R.E. Bilsborrow, “Collecting Data on the Migration-Environment Nexus”, in F. Laczo & C. Aghazarm (eds.), *Migration, Environment and Climate Change: Assessing the Evidence*, Geneva, IOM, 2009, 115–196; E. Piguet, “Linking Climate Change, Environmental Degradation and Migration: a Methodological Overview”, *Wiley Interdisciplinary Reviews: Climate Change*, 1(4), 2010, 517–524.

<sup>62</sup> C. Mortreux & J. Barnett, “Climate Change, Migration and Adaptation in Funafuti, Tuvalu”, *Global Environmental Change*, 19(1), 2009, 105–112.

<sup>63</sup> M. Hulme, “Geographical Work at the Boundaries of Climate Change”, *Transactions of the Institute of British Geographers*, 33(1), 2008, 5–11.

and thus for negating the multi-causality discussed above. As noted by Stephen Castles, “the term ‘*environmental refugee*’ is simplistic, one-sided and misleading. It implies a monocausality which very rarely exists in practice” and “[environmental and natural factors] are part of complex patterns of multiple causality, in which [they] are closely linked to economic, social and political ones.”<sup>64</sup> In this sense, there will never be any “environmental migrant” (or “climatic refugee”) because it will never be possible to identify a group of people who migrate *only* because of environmental variables.

Although quite widely accepted, the definition of “environmental migrants” provided by the IOM suffers from the same shortcoming.<sup>65</sup> The term “environmentally induced population movements” (EIPM) might constitute a more neutral solution, but it is vague and not very appealing to the general public. Another option is the term “environmentally displaced person” (EDPs), which was for example used in the EACH-FOR research project. It encompasses three subcategories: environmental migrants (people who chose to move voluntarily from their place of residence primarily due to environmental reasons); environmental displaces (people who are forced to leave their place of residence because their livelihoods are threatened as a result of adverse environmental processes and events); and development displaces (people who are intentionally relocated or resettled due to a planned land use change). The boundaries between these three sub-groups remain nevertheless fuzzy.

Politically, conceptual discussions have focused on the use of the “refugee” notion. Legally, this notion refers to the status recognized by the 1951 Geneva Convention Relating to the Status of Refugees (Refugee Convention) and to its definition of “refugee” as a person leaving his/her country of residence for “well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion”.<sup>66</sup> Environmental reasons are absent from this definition, which can lead to two opposite positions: one may either advocate for an extension of this definition to include environmental factors (and hence for a modification of the Refugee Convention or for a new treaty specifically addressing the case of “environmental refugees”); or one may reject the very reference to “refugees” in the case of climate change, mostly for fears of diluting a specific legal category into a broader and ill-defined category. This led the UNHCR to cast “serious reservations with respect to the terminology and notion of environmental refugees or climate refugees”, noting that “these terms have no basis in international refugee law” and the majority of those who are commonly described as environmental refugees have not crossed

<sup>64</sup> Castles, *Environmental Change and Forced Migration*, 8,5.

<sup>65</sup> “Persons or groups of persons who, for compelling reasons of sudden or progressive change in the environment as a result of climate change that adversely affect their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad”. This definition was first put forward in a 2007 background paper (MC/INF/288) at the 94th IOM Council.

<sup>66</sup> Geneva Convention Relating to the Status of Refugees, 189 UNTS 150, 28 Jul. 1951 (entry into force: 22 Apr. 1954), Art. 1 A(2).

an international border. Use of this terminology “could potentially undermine the international legal regime for the protection of refugees” and create confusion regarding the link between climate change, environmental degradation, and migration.<sup>67</sup>

Indeed, in a context in which the respect for the Refugee Convention is already under threat, incorporating environmental factors in refugee debates could eventually jeopardise the protection afforded to recognized refugees. The reasons given are threefold. First, this could strengthen the already widespread fears surrounding uncontrollable waves of poor refugees to developed countries, thereby fuelling xenophobic reactions or serving as a justification for increasingly restrictive asylum policies. It could also further blur the already fragile distinction between voluntary (i.e. economic) and forced (i.e. political) migration – thus undermining the very foundations of the asylum principle. And finally, in a more fundamental manner, it could introduce a sort of “natural” connotation to asylum issues, which would be incompatible with the political nature of the persecutions considered by the Refugee Convention:

In so far as the term environmental refugee conflates the idea of disaster victim and refugee, its use brings with it the danger that the key features of refugee protection could be undermined and the lowest common denominator adopted. Because environmental can imply a sphere outside politics, use of the term environmental refugee may encourage receiving states to treat the term in the same way as economic migrants to reduce their responsibility to protect and assist.<sup>68</sup>

In other words, the danger here would be “to evacuate political responsibility by overplaying the hand of nature”.<sup>69</sup>

This “hand of nature” argument could be challenged, however, on the ground that climate change (unlike tsunamis or earthquakes) is not a neutral or apolitical phenomenon, but to a large extent the product of world economic development. The “world” would thus be responsible for the situation of climate “refugees” (which is not the case with the many traditional refugees who leave local conflicts or dictatorships that may not be directly connected to world politics). As Zetter writes: “The strength of the climate change argument lies in a common conception that specific moral burdens rest on global society. Such global burdens do not readily appear to exist for the other, more localized,

<sup>67</sup> UNHCR, *Climate Change, Natural Disasters and Human Displacement: A UNHCR Perspective*, Geneva, UNHCR, 2009, 8–9, available at: <http://www.unhcr.org/cgi-bin/texis/vtx/search?page=search&docid=4901e81a4&query=convention%20on%20refugees> (last visited 17 Mar. 2011).

<sup>68</sup> J. McGregor, “Refugees and the Environment”, in R. Black & V. Robinson (eds.), *Geography and Refugees: Patterns and Processes of Change*, London, Belhaven, 1993, 162.

<sup>69</sup> L. Cambrézy, *Réfugiés et Exilés: Crise des Sociétés, Crise des Territoires*, Paris, Editions des Archives Contemporaines, 2001.

categories of migrants such as refugees and IDP.”<sup>70</sup> One could go one step further and argue that a small number of wealthy States are, in fact, at the origins of most of climate change, and that past CO<sub>2</sub> emissions could consequently determine the respective share of responsibility of States. According to IOM’s 2008 *World Migration Report*,

[S]ome analysts are beginning to argue that migration is both a necessary element of global redistributive justice and an important response to climate change; and that greenhouse gas emitters should accept an allocation of “climate migrants” in proportion to their historical greenhouse gas emissions.<sup>71</sup>

In this context, States and populations in the “South” display resentment (and make claims) toward the “North” on the basis of its responsibility in fuelling climate change – even if developed States have so far remained largely indifferent.

As has become clear, the conceptual discussion around the definition best suited to describe and analyse the link between migration and environmental change goes far beyond purely conceptual issues and raises the question of the protection and status to be granted to the people concerned, and of the responsibilities of the international community toward them. Given the far-reaching complexity of these debates, a consensus is unlikely to be reached in the near future, neither among researchers, nor in policy and public debates. As a consequence, differences in terms, notions, and definitions are likely to persist. But as Walter Kälin (former Representative of the UN Secretary-General on the Human Rights of Internally Displaced Persons) stated,

We should not be distracted by semantic discussions with little practical meaning about whether to call affected persons “climate change refugees”, “environmental migrants” or something else. Instead, what is needed is a thorough analysis of the different contexts and forms natural disaster induced displacement can take.<sup>72</sup>

In other words, as long as participants in the debate share core concerns (including multi-causality and the recognition of the social construction of vulnerability), a variety of terminologies does not hamper the development of a coherent common approach on the issues at stake.

<sup>70</sup> R. Zetter, “The Role of Legal and Normative Frameworks for the Protection of Environmentally Displaced People”, in F. Laczko & C. Aghazarm (eds.), *Migration, Environment and Climate Change: Assessing the Evidence*, Geneva, IOM, 2009, 400.

<sup>71</sup> IOM, *World Migration Report 2008: Managing Labour Mobility in the Evolving Global Economy*, Geneva, IOM, 2008, 399.

<sup>72</sup> W. Kälin, “The Climate Change – Displacement Nexus”, ECOSOC Panel on Disaster Risk Reduction and Preparedness: Addressing the Humanitarian Consequences of Natural Disasters, 16 Jul. 2008, available at: [http://www.brookings.edu/speeches/2008/0716\\_climate\\_change\\_kalin.aspx](http://www.brookings.edu/speeches/2008/0716_climate_change_kalin.aspx) (last visited 17 Mar. 2011).

## 11. Protection of environmental migrants and States' responsibilities

As argued, the different terms referring to people who migrate in connection with environmental factors imply different representations of how States could or should treat these people and of the protection that they should receive. The starting point of this complex and sensitive issue is the current absence of standards in defining this protection; indeed, none of the concepts mentioned above have a legal definition – leading to an institutional and normative vacuum.

In the absence of specific norms, one could try to rely on existing instruments and explore how they relate to the issues relating to environmental migrants. In the case of people moving within their own country (which, as argued above, is the most frequent case), existing soft law instruments, and notably the Guiding Principles on Internal Displacement, do recognize some environmental factors (e.g. disasters) as a cause for displacement. But they suffer from implementation challenges, which are due to problems of definition and to the non-binding nature of the Principles. Concerning international migration, some elements of existing international law could be of relevance to environmental migration (like the international responsibility for wrongful acts for example). But they address only part of the issues raised by environmental migration and are difficult to implement, in particular because of the difficulty of identifying single responsible States in the case of environmental disasters or climate change.

If there is a consensus on the existence of legal loopholes, there are disagreements over the remedies to this situation. On the one hand, there have been numerous calls for the elaboration of new standards to define the responsibilities of States and the protection of the people concerned. These range from amending the Refugee Convention to the development of entirely new instruments, either at the bilateral, regional, or international level. On the other hand, one should note that calls for new normative instruments will not only face a deep lack of political willingness, but also more structural obstacles. In particular, the categories of “environmental migrants” may be too vague and ill-defined to justify a new treaty, which would risk being politically visible but legally useless. Moreover, the collective dimension of migration in the case of environmental change, along with the absence of a clearly-defined persecutor, makes the analogy with refugees problematic.<sup>73</sup>

Indeed, the establishment of a new treaty faces several challenges. Not only will it be hard to reach an international agreement on the definitions of the people concerned and the criteria to grant protection, but negotiations are likely

<sup>73</sup> Another legal issue connected to climate change and migration regards statelessness. In the case of sinking island states, not only would inhabitants need to leave their home, but entire countries could disappear. Migrants from these states would then risk becoming stateless, which calls for innovative legal and policy approaches (see, for a discussion: UNHCR, *Climate Change, Natural Disasters and Human Displacement*; and E. Piguet, *Les apatrides du climat*, Fondation “Mémoire Albert Cohen”, e-colloque: “L'état de droit”, 2010, available at: <http://www.fondationmemoirealbertcohen.ch/>; (last visited 17 Mar. 2011).

to bump into highly sensitive issues surrounding the responsibilities of industrialised nations – an obstacle that has proven very prominent in international discussions pertaining to climate change. In addition, there is the risk of exercising a downward pressure on existing treaties like the Refugee Convention. In this context, and regardless of the different perceptions that exist, it seems likely that environmental factors will increasingly fuel migration, but without a specific legal framework (at least at the international level). Yet, this does not prevent an examination of the policy orientations relevant to situations of environmental migration.

## 12. Possible policy orientations

What are the policies that have been elaborated to respond to environmentally-induced migration? And what are the policy orientations that could be envisaged to address the challenges raised by the movement of people in a context of environmental change? Given the heterogeneity in the types of climate stress that can foster migration, it is worth distinguishing between different kinds of policy options.

First, there is the case of disasters and sudden climatic events. There have always been typhoons, floods, or other natural catastrophes and most, if not all, regions of the world have experienced the challenge of addressing the situations of the persons concerned. The problem lies in the efficiency of the already existing mechanisms, especially if one assumes that climate change will increase the frequency and/or intensity of some kinds of disasters – thus putting humanitarian efforts under further stress. This calls for reinforcing rescue mechanisms and, in the case of less developed countries, for greater international solidarity, not least in making the necessary funds available. This is one of the *raison d'être*, at the international level, of the United Nations Disaster Assessment and Coordination (UNDAC) teams, managed by the UN Office for the Coordination of Humanitarian Affairs (OCHA). Overall, the main objective should therefore be to make a more extensive use of existing policy mechanisms and to adapt them to the specific challenges raised by climate change.

Yet, one should keep in mind that the impact of climate change on migration will also manifest itself through much less sudden events. All too often, Governments and policy-makers seem to react above all to disasters that force people to leave overnight; this applies to some of the most documented cases of environmental migration, like the 2004 Asian Tsunami and the 2005 Hurricane Katrina in New Orleans. By contrast, the “silent crisis” fuelled by progressive environmental change, while affecting potentially very high numbers of people, is the object of much less policy attention. In some extreme cases, resettlement may constitute the appropriate policy, in order to enable large numbers of people to leave their home on a permanent basis. But these are not new policies either as resettlement has regularly been implemented in other contexts, especially in relation to large scale infrastructure projects such as dams. Again therefore, the

relevant policy approach would be to improve existing policy options, through increased funding and international cooperation.

This being said, resettlement is not an option for all the people concerned by progressive manifestations of climate change. There is therefore a need to envisage a much broader range of responses, to address the multifaceted challenges raised by slow environmental deterioration. At the local level, this could for example include measures to diversify economic activities in order to enable people to better adapt to climate change. More broadly, this would call for incorporating the migration-climate change relationship in existing fields of policy that have so far not only tended to ignore migration, but have also remained quite separate from each other. These notably include development strategies and humanitarian interventions, two well established fields of efforts at all levels (national, regional, and international), but that have so far dedicated little energy to climate change, and even less to migration.

In the same vein, one should note that environmental migration is also a matter for migration policy at large. If, as argued, environmental factors exacerbate already existing push factors in less developed countries, more appropriate migration policies could probably accommodate part of “environmental migration” through classical schemes such as economic migration programmes. IOM thus notes that “the international community is, in fact, ignoring labour mobility as a coping strategy for climate stress”.<sup>74</sup> This echoes the numerous calls for more realistic and flexible approaches to migration that have been launched in recent years.<sup>75</sup> This also implies strengthening the legal framework in which international migration takes place, possibly through existing norms such as the UN Convention on Migrant Workers’ Rights.<sup>76</sup>

This discussion highlights the fact that, even if environmental migration is regularly presented as a “new” challenge requiring “new” responses, there is actually a number of existing policy fields that can be relied upon to address the challenges it raises, including development strategy, humanitarian affairs, post-disaster interventions, or immigration and admission policies. This is not to say that new normative or policy instruments are irrelevant; rather, it means that new instruments may not be a prior necessity to address the needs of the populations at risk and that an absence of consensus on the desirability of such new standards does not imply that nothing can be done.

<sup>74</sup> IOM, *World Migration Report 2008*, 399.

<sup>75</sup> United Nations Development Program (UNDP), *Human Development Report 2009. Overcoming Barriers: Human Mobility and Development*, New York, UNDP, 2009, available at: [http://hdr.undp.org/en/media/HDR\\_2009\\_EN\\_Complete.pdf](http://hdr.undp.org/en/media/HDR_2009_EN_Complete.pdf) (last visited 17 Mar. 2011). See also A. Pécoud & P. de Guchteneire, *Migration without Borders: Essays on the Free Movement of People*, Oxford/Paris, Berghahn/UNESCO Publishing, 2007.

<sup>76</sup> R. Cholewinski, P. de Guchteneire & A. Pécoud (eds.), *Migration and Human Rights. The United Nations Convention on Migrant Workers’ Rights*, Cambridge/Paris, Cambridge University Press/UNESCO Publishing, 2009.

### 13. Conclusion

Climate change does have consequences in terms of human migration and mobility, and its impact can be expected to increase. But, given the complexity of the relationship between environmental change and migration, it is worth recalling that climatic or natural hazards do not automatically lead to displacements. Another core argument of this article is that migration is an adaptation strategy in itself; it is not necessarily the worst scenario and should not be seen as an intrinsically negative outcome to be avoided. Finally, climate change will be experienced very differently around the world and across countries, as the vulnerability to nature is ultimately a product of the socio-economic forces that shape all societies.

The social dimension of vulnerability should be interpreted as an opportunity to increase people's ability to resist climate change. Indeed, if human beings were completely helpless in the face of nature and climate change, very little could be done. But they are not and this opens opportunities for local and international efforts in gathering knowledge, drafting measures, and increasing protection. Provided that the necessary financial means are made available, even such an apparently unavoidable threat like rising sea-levels could be partially counteracted. It also follows that, if environmental migration is fundamentally a political process, the actual number of people who will move cannot be predicted, but depends upon current and future efforts.

This approach also implies going beyond the traditional "alarmist vs. sceptics" debate and recognizing that, while there are no reasons to exaggerate the threats and inspire an ungrounded panic, there are nevertheless good reasons to take the problem seriously. This particularly concerns data gathering. More knowledge is required to address the situation of people affected by environmental change and it is paramount to better understand the kind of patterns that develop out of it in order to envisage potentially successful policies. In addition, research on these issues requires increased cooperation between social and natural sciences, for instance in the elaboration of complete and comparable databases.

All in all, climate change is a process that exacerbates some of the most pressing issues of our time. It does not take place in a vacuum but is closely associated with underdevelopment, inequalities within and between countries, global justice, and the lack of solidarity between States, human rights, or human security. Climate change as a policy area may be relatively recent, but most of these issues represent long-standing challenges for States and the international community. It follows that policies that focus on the climate change-migration nexus must be accompanied by renewed efforts to combat the very context that make people vulnerable in the first place.